

REMARKS

The foregoing amendment does not include the introduction of new matter into the present application for invention. Therefore, the Applicant, respectfully, requests that the above amendment be entered in and that the claims to the present application, kindly, be reconsidered.

The Office Action dated June 14, 2004 has been received and considered by the Applicants. Claims 1-20 are pending in the present application for invention. Claims 1-20 are rejected by the June 14, 2004 Office Action.

The Examiner objects to the specification for not including section headings. The Applicants, respectfully, decline to add the optional section headings because there is no requirement within 37 C.F.R. 1.77(b) that section headings must be included.

The Office Action rejects Claims 7-9 and 16-18 under the provisions of 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that Claims 7-8 and 16-17 recite the limitation "the storage device" in the last two lines of the claim without proper antecedent basis for this limitation in the claim. The foregoing amendment to the claims has corrected these oversights.

The Examiner making the rejection with regard to Claim 9 and 18 states that the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. The foregoing amendment to the claims has corrected these oversights.

The Office Actions rejects Claims 1, 3, 5-9, 12-18 under the provisions of 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,580,579 issued to Hsin et al. (hereinafter referred to as Hsin et al.), in view of the admitted Prior Art discussed by Hsin et al. on col. 2, lines 6-12.

Regarding Claim 1, the Examiner states that Hsin et al. disclose an apparatus having a control circuit, which comprises a feedforward filter arrangement and a controller characterized in that an adaptation of the parameters of the feedforward filter arrangement are adapted by an adaptation algorithm during operation of the apparatus. The Examiner further states that Hsin et al. do not disclose that the parameters of the controller can be adapted by an adaptation algorithm. The Examiner's position is that it would be obvious for a person of ordinary skill

within the art to combine the admitted prior art discussed by Hsin et al. on col. 2, lines 6-12 with Hsin et al. to create the subject matter defined by rejected Claim 1. The Applicants, respectfully, disagree.

The admitted prior art discussed by Hsin et al. on col. 2, lines 6-12 states that "Kempf used an accelerometer on a compact disc play to control the focus length of the reading lens. The filtered-x LMS adaptation algorithm was applied to the controller parameters." The Applicants do not concur that it would be obvious for a person skilled in the art viewing the prior art discussed by Hsin et al. on col. 2, lines 6-12 to create the invention defined by rejected Claim 1. The admitted prior art discussed by Hsin et al. on col. 2, lines 6-12 simply states that Kempf used an accelerometer on a compact disc play to control the focus length of the reading lens and that the filtered-x LMS adaptation algorithm was applied to the controller parameters. The Applicants would like to draw the Examiner's attention to the discussion on col. 1, lines 62-67 wherein the discussion of the prior art discussed by Hsin et al. states that Hanks proposed accelerometers to attenuate disturbances with disc drives in which a single gain was determined off-line to feed the accelerometer signal in the coil motor (emphasis added). The admitted prior art discussed by Hsin et al. on col. 1, line 67-col. 3, line 6 states that Abramovitch used the least-mean-square (LMS) algorithm to estimate the value of the single gain. The Applicants, respectfully, assert that the LMS algorithm discussed as prior art by Hsin et al. on col. 2, lines 6-12, must be viewed in the context within which it is used i.e. that an LMS adaptation algorithm is used to estimate the value of the single gain and that the single gain is determined off-line. The subject matter defined by rejected Claim 1 includes that the parameters of the feedforward filter arrangement and the parameters of the controller are adapted by an adaptation algorithm during operation of the apparatus, not off-line. There is nothing within Hsin et al. that would lead a person skilled in the art to believe that it is possible to adapt the parameter to the controller during operation. The Applicants, respectfully, point out that the prior art discussed by Hsin et al. discuss a single gain that is determined off-line and applied to the apparatus. The prior art discussed by Hsin et al. do not discuss the single gain being determined during operation of the apparatus.

The Applicants, respectfully, point out that there is no suggestion or motivation given by Hsin et al. to apply an adaptation algorithm to the controller. Additionally, the Applicants point out that there is no suggestion or motivation given by the admitted prior art discussed by Hsin et

al. on col. 2, lines 6-12 that would lead a person skilled in the art to use an adaptation algorithm to adapt the parameters of the controller during operation. Hsin et al. teach rejection of disturbances using an adaptive accelerometer feedforward servo. The Applicants respectfully point out that Hsin et al. discuss certain prior art but makes no mention or suggestion to adapt the parameters to the controller. The Applicants respectfully submit that the Examiner is attempting to read items into the cited reference Hsin et al. that simply put, are not there. Hsin et al. is certainly aware of the prior art discussed therein but does not envision adapting parameters to the control relative to variations in external disturbances. Hsin et al. are of ordinary skill within the art. If the combination suggested by the Examiner were obvious to a person of ordinary skill within the art, then the Applicants request that the Examiner explain why Hsin et al. make no mention of the combination that the Examiner asserts is obvious.

Accordingly, there remain features within rejected Claim 1 that are not found by the Office Action. Therefore, this rejection is respectfully traversed.

Regarding Claim 3, the Examiner states that the combination of Hsin et al. and the prior art discussed by Hsin et al. show that the apparatus includes a disk drive for storage disk media in which vibrations and internal disturbances, which occur during operation of the apparatus, are compensated by the adaptation algorithm optimizing the parameters of the feedforward filter arrangement and the parameters of the controller. The Applicants, respectfully assert that the Examiner is indulging in hindsight recreation. As stated above in the response to the rejection to Claim 1, the prior art discussed by Hsin et al. applies a filter LMS adaptation algorithm to control the focus length of reading lens. Rejected Claim 3 specifically defined subject matter for vibrations and internal disturbances which occur during operation of the apparatus are compensated by the adaptation algorithm optimizing the parameters of the feedforward filter arrangement and the parameters of the controller. There is nothing in the prior art discussed by Hsin et al. would even remotely lead a person skilled in the art believe that the control of focal length by Kempf would be useful for compensating vibrations and internal disturbances which occur during operation of the apparatus. Moreover, there is no disclosure or suggestion in the prior art discussed by Hsin et al. for directly compensating anything during operation of the apparatus. As previously discussed the prior art discussed by Hsin et al. pertains to deriving a single constant gain off-line. Accordingly, all the features of rejected Claim 3 are not found in the Office Action. Therefore, this rejection is, respectfully, traversed.

Regarding Claim 5, the Examiner states that the combination of Hsin et al. and prior art discussed by Hsin et al. show a controller that comprises an input for receiving adapted control parameters relative to variations in external disturbances. The Applicants, respectfully, disagree. The teachings of Hsin et al. do not disclose, suggest or mention in any way, a controller that receives an adapted control parameter. Furthermore, the prior art discussed by Hsin et al. does not disclose, suggest or mention in any way a controller that receives adapted control parameters relative to variations in external disturbances.

The Applicants respectfully point out that the MPEP states at §2143 under the Basic Requirements of a *Prima Facie* Case of Obviousness that in order to “establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” The Applicants assert that none of the foregoing requirements are met by the rejection contained in the Office Action.

Furthermore, the courts have found that the “teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).” The combined teachings of Hsin et al. with the prior art discussed by Hsin et al. do not disclose, suggest a controller that receives adapted control parameters relative to variations in external disturbances. Therefore, this rejection is, respectfully, traversed.

Regarding Claim 6, the Examiner states that the combination of Hsin et al. with the prior art discussed by Hsin et al. show an apparatus that comprises a storage media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller and the disturbance-variable feedforward. Hsin et al. at col. 4, lines 12-15 teach that an error signal provide to the control but there is no disclosure or suggestion for adapting the parameter of the controller. The prior art discussed by Hsin et al. mentions providing an adapted parameter to a controller but there is no disclosure or suggestion to provide an adapter parameter in response to vibration or disturbances. Hsin et al. teach rejection of disturbances using an adaptive accelerometer feedforward servo. The Applicants respectfully point out that Hsin et al. discuss certain prior art but makes no

mention or suggestion to adapt the parameters to the controller. The Applicants respectfully submit that the Examiner is attempting to read items into the cited reference Hsin et al. that simply put, are not there. Hsin et al. is certainly aware of the prior art discussed therein but does not envision adapting parameters to the control relative to variations in external disturbances. Hsin et al. are of ordinary skill within the art. If the combination suggested by the Examiner were obvious to a person of ordinary skill within the art, then the Applicants request that the Examiner explain why Hsin et al. make no mention of the combination that the Examiner asserts is obvious.

Regarding Claim 7, the Examiner states that the combination of Hsin et al. with the prior art discussed by Hsin et al. show an apparatus that comprises a feedforward filter arrangement that receives a disturbance signal from sensors and further comprising the disturbance signal being received by a computational element that performs the adaptation algorithm. As previously discussed, the teachings of Hsin et al. combined with the prior art discussed by Hsin et al. does not disclose or suggest a controller that receives adapted control parameters relative to variations in external disturbances. Hsin et al. teach rejection of disturbances using an adaptive accelerometer feedforward servo. The Applicants respectfully point out that Hsin et al. discuss certain prior art but makes no mention or suggestion to adapt the parameters to the controller. The Applicants respectfully submit that the Examiner is attempting to read items into the cited reference Hsin et al. that simply put, are not there. Hsin et al. is certainly aware of the prior art discussed therein but does not envision adapting parameters to the control relative to variations in external disturbances. Hsin et al. are of ordinary skill within the art. If the combination suggested by the Examiner were obvious to a person of ordinary skill within the art, then the Applicants request that the Examiner explain why Hsin et al. make no mention of the combination that the Examiner asserts is obvious.

The Examiner making the rejection with regard to Claim 8 states that the combination of Hsin et al. with the prior art discussed by Hsin et al. show the computational element that performs the adaptation algorithm employs at least one control variable from the controller to adapt parameters of the feedforward filter arrangement and the controller. Claim 8 includes all the elements of Claims 7, 6 and 1, which as previously discussed are believed to be allowable. Therefore, Claim 8 is believed to be allowable.

Regard Claim 9, the Examiner states that the combination of Hsin et al. with the prior art discussed by Hsin et al. show the controller and the feedforward filter arrangement are responsive to external events "such as" vibrations and temperature variations in components of the apparatus. Claim 9 includes all the elements of Claim 1, which as previously discussed is believed to be allowable. Therefore, Claim 9 is believed to be allowable.

The Examiner making the rejection with regard to Claim 12 states that Hsin et al. combined with the prior art discussed by Hsin et al. render obvious the elements of Claim 12. As previously discussed, the teachings of Hsin et al. combined with the prior art discussed by Hsin et al. does not disclose or suggest a controller that receives adapted control parameters relative to variations in external disturbances. Hsin et al. teach rejection of disturbances using an adaptive accelerometer feedforward servo. The Applicants respectfully point out that Hsin et al. discuss certain prior art but makes no mention or suggestion to adapt the parameters to the controller. The Applicants respectfully submit that the Examiner is attempting to read items into the cited reference Hsin et al. that simply put, are not there. Hsin et al. is certainly aware of the prior art discussed therein but does not envision adapting parameters to the control relative to variations in external disturbances. Hsin et al. are of ordinary skill within the art. If the combination suggested by the Examiner were obvious to a person of ordinary skill within the art, then the Applicants request that the Examiner explain why Hsin et al. make no mention of the combination that the Examiner asserts is obvious.

Regard Claim 13, Claim 13 depends from Claim 12 which as previously discussed is believe to be allowable. The fro, Claims 13 is also believed to be allowable.

The Examiner making the rejection with regard to Claim 14 states that the combination of Hsin and the Hsin's admitted Prior Art would show wherein the controller comprises an error signal input, for receiving error signals responsive to operation of a controlled device. As previously discussed, Hsin et al. combined with the prior art discussed by Hsin et al. does not disclose or suggest an input to receive adapted control parameter relative to variations in external disturbances.

Regarding Claim 15, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. teach an apparatus that comprises a storage media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller, and the disturbance-variable

feedforward. As previously discussed, Hsin et al. combined with the prior art discussed by Hsin et al. does not disclose or suggest an input to receive adapted control parameter relative to variations in external disturbances.

Regarding Claim 16, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. show the feedforward filter arrangement that receives a disturbance signal from sensors and the disturbance signal being received by a computational element that performs the adaptation algorithm to adapt parameters of the feedforward filter arrangement and the controller. The Applicants, respectfully point out that there is no computation element discussed in Hsin et al. More specifically, there is no computational element that performs the adaptation algorithm to adapt parameters of the feedforward filter arrangement and the controller as asserted in the Office Action.

Regarding Claim 17, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. show the computational element that performs the adaptation algorithm employs at least one control variable from the controller to adapt parameters of the feedforward filter arrangement and the controller. The Applicants, respectfully point out that there is no computation element discussed in Hsin et al. More specifically, there is no computational element that performs the adaptation algorithm using a variable from the controller to adapt parameters of the feedforward filter arrangement and the controller as asserted in the Office Action.

Regarding Claim 18, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. show the controller and the feedforward filter arrangement are responsive to external events "such as" vibrations and temperature variations in components of the apparatus. Claim 18 depends from Claim 12 which as previously discussed is believed to be allowable. Therefore, Claim 18 is believed to be allowable.

Regarding Claim 20, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. show wherein the apparatus further comprises a storage disk media, in which vibrations and internal disturbances are compensated by the adaptation algorithm that adapts parameters of the feedforward filter arrangement, the parameters of the controller and the disturbance-variable feedforward. Claim 20 depends from Claim 12 which as previously discussed is believed to be allowable. Therefore, Claim 20 is believed to be allowable.

The Office Action rejects Claims 2, 4, 10-11, and 19 under the provisions of 35 U.S.C. §103(a) as being unpatentable over Hsin et al. combined with the prior art discussed by Hsin et al. and further in view of U.S. Patent No. 5,619,581 issued to Ferguson et al. (hereinafter referred to as Ferguson et al.).

Regarding Claim 2 and 19, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. show all the limitations based on Claims 1 and 12. The Examiner further states that this feature is well known in the art as evidenced by Ferguson et al. discloses a control system for cancellation vibration whereby the system includes an adaptation algorithm executed by a microprocessor, particularly a digital signal processor. The Applicants respectfully point out that the combination made by the Office Action does not teach or suggest the parameters of the controller being adapted by a digital signal processor. Accordingly, there remain unbound features within the rejected claims that are not found by the rejection made in the Office Action. Therefore, this rejection is respectfully traversed.

Regarding Claim 4, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. render obvious to one with ordinary skill in the art at the time of the invention to apply an adapted version of the disturbance signals as parameters to the controller. As previously discussed, Hsin et al. combined with the prior art discussed by Hsin et al. do not disclose or suggest the application of an adapted version of the disturbance signals as parameters to the controller. Therefore, this rejection is respectfully traversed.

Regarding Claim 10, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. and Ferguson et al. render obvious the step of applying the adapted versions of the disturbance signals as parameters to the controller and further applying an adapted versions of the disturbance signals as parameters to the feedforward filter. As previously discussed, Hsin et al. combined with the prior art discussed by Hsin et al. do not disclose or suggest the application of an adapted version of the disturbance signals as parameters to the controller. Therefore, this rejection is respectfully traversed.

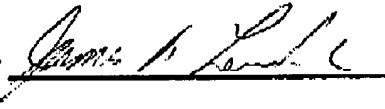
Regarding Claim 11, the Examiner states that Hsin et al. combined with the prior art discussed by Hsin et al. and Ferguson et al. render obvious the step of providing outputs from the processor to alter parameters of the feedforward filter and the controller employs reference variables, error signals, and control variables to alter parameters of the feedforward filter and the controller. As previously discussed, Hsin et al. combined with the prior art discussed by Hsin et

al. do not disclose or suggest the providing of outputs from the processor to alter parameters of the feedforward filter and the controller employs reference variables, error signals, and control variables to alter parameters of the feedforward filter and the controller.. Therefore, this rejection is respectfully traversed.

Applicant is not aware of any additional patents, publications, or other information not previously submitted to the Patent and Trademark Office which would be required under 37 C.F.R. 1.99.

In view of the foregoing amendment and remarks, the Applicant believes that the present application is in condition for allowance, with such allowance being, respectfully, requested.

Respectfully submitted,

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